REMARKS

Applicant respectfully submits that all the claims presently on file are in condition for allowance, which action is earnestly solicited.

THE CLAIMS

CLAIMS REJECTION UNDER U.S.C. 103

Claims 4 and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bueno et al., U.S. Patent No. 4,726,297 (hereinafter "Bueno"), in view of Fowler et al., U.S. Patent No. 6,453,821, (hereinafter "Fowler"). Applicant respectfully traverses this rejection and submits that neither reference discloses the elements and features of the claims on file, whether considered individually or in combination with each other. To this end, Applicant respectfully submits the following arguments:

A. Brief Summary of the Present Invention

Prior to presenting substantive arguments in favor of the allowability of the claims on file, it might be desirable to summarize the present invention.

Grenade dispensing mechanisms for non-spin or low spin dual purpose improved conventional munitions, are launched from inside a projectile. At a pre-determined point along the trajectory, the projectile time fuze is set to provide initiation output to the payload expulsion charge assembly. The assembly contains a propellant which, when ignited, produces a gas pressure

acting on a pusher plate which acts as a piston. **The gas pressure increases with time until the forces of the gas pressure acting on the pusher plate through the grenade payload to the base/tail assembly are sufficient to shear the thread attachment of the base assembly to the projectile body section.**

An obturator band serves to obdurate, or seal, the expulsion gas pressures, in order to prevent excessive gas blow-by as the payload canister assembly travels through the rifled projectile body section. **Upon thread shear, the base separates from the projectile body permitting the movement of the grenade payload toward the aft open end of the projectile body.** The projectile payload section contains the space occupied by the warhead or payload canister assembly. The steel cylindrical canister encloses the grenade sub-package.

A pre-engraved rotating band attached to the payload canister as it travels through the projectile section rifling creates a torque thus the grenade emerges from the projectile body with rotational and tangential velocity determined by its position in the payload section. This rotational and tangential velocity causes the grenades to disperse, arm, and stabilize to form a large approximately uniform, distribution of grenades in a pattern effects over a **target area**. The mechanism can be adjusted to handle a variety of other submunitions, anti-personnel, or anti-material.

B. Legal Standards for Obviousness

The following legal authorities set the general legal standards in support of Applicants' position of non obviousness, with emphasis added for added clarity:

- MPEP §2143.03, "All Claim Limitations Must Be Taught or Suggested: To establish prima facie obviousness of a claimed invention, **all the claim limitations must be taught or suggested by the prior art**. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "**All words in a claim must be considered** in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)."

- MPEP §2143.01, "The Prior Art Must Suggest The Desirability Of The Claimed Invention: There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (**The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a prima facie case of obvious was held improper**.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

- "**Obviousness cannot be established** by combining the teachings of the prior art to produce the claimed invention, **absent some teaching or suggestion** supporting the combination." *In re Fine, 837 F.2d at 1075, 5 USPQ2d at 1598* (citing *ACS Hosp. Sys. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)*). **What a reference teaches** and whether it teaches toward or **away from the claimed invention** are questions of fact. See *Raytheon Co. v. Roper Corp., 724 F.2d 951, 960-61, 220 USPQ 592, 599-600 (Fed. Cir. 1983)*, cert. denied, *469 U.S. 835, 83 L. Ed. 2d 69, 105 S. Ct. 127 (1984)*. "

- "When a rejection depends on a combination of prior art references, there must be **some teaching, suggestion, or motivation** to combine the

references. See *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987)." Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention **where there is some teaching, suggestion, or motivation** to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See MPEP 2143.01; In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

- "With respect to core factual findings in a determination of patentability, however, the **Board cannot simply reach conclusions based on its own understanding or experience** – or on its assessment of what would be basic knowledge or common sense. **Rather, the Board must point to some concrete evidence in the record** in support of these findings." See In re Zurko, 258 F.3d 1379 (Fed. Cir. 2001).

- "We have noted that **evidence of a suggestion, teaching, or motivation to combine** may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved, see Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), Para-Ordinance Mfg. v. SGS Imports Intern., Inc., 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995), although "the suggestion more often comes from the teachings of the pertinent references," Rouffet, 149 F.3d at 1355, 47 USPQ2d at 1456. The range of sources available, however, does not diminish the requirement for actual evidence. That is, **the showing must be clear and particular**. See, e.g., C.R. Bard, 157 F.3d at 1352, 48 USPQ2d at 1232. **Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence."** E.g., McElmurry v. Arkansas Power & Light Co., 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993) ("Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact."); In re Sichert, 566 F.2d 1154, 1164, 196 USPQ 209, 217 (CCPA 1977)." See In re Dembiczak, 175 F. 3d 994 (Fed. Cir. 1999).

- "To prevent the use of hindsight based on the invention to defeat patentability of the invention, **this court requires the examiner to show a motivation to combine the references** that create the case of obviousness. In other words, **the examiner must show reasons** that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art

references **for combination in the manner claimed**." See In re Rouffet, 149, F.3d 1350 (Fed. Cir. 1998).

- The mere fact that references can be combined or modified does not render the resultant combination obvious **unless the prior art also suggests the desirability of the combination**. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, **there must be a suggestion or motivation in the reference** to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). See also In re Fritch, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).

- If the **proposed modification would render the prior art invention being modified unsatisfactory** for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 22 USPQ 1125 (Fed. Cir. 1984).

C. Application of the Legal Standards to the Claims on file

Applicant will now present arguments in support of the allowance of the claims over Bueno and Fowler.

C.1. Neither reference teaches a projectile containing a pusher plate causing the shearing of the attachment mechanism to shearably detach from the payload section

Neither Bueno nor Fowler teaches a projectile that contains a propellant which, when ignited, produces a gas pressure acting on a pusher plate that acts as a piston. The gas pressure increases with time until the forces of the gas pressure acting on the pusher plate 4 through the payload to the tail assembly,

are sufficient to shear the (threaded) attachment of the base assembly to the projectile body section.

C.2. Neither reference teaches how to induce spin in munitions payload launched from inside a projectile

Neither the Bueno nor the Fowler patent teaches the induction of **spin in munitions payload** from a dispensing mechanism for non-spin or low spin dual purpose improved conventional munition (DPICM) **launched from inside a projectile.**

C.3. Both references teach away from the present invention

Bueno and Fowler illustrate conventional launchers of projectiles and release of their munition payload. Both of these references, whether considered individually, or in combination with each other, teach away from the present configuration of a pusher plate inducing shearing threads and a projectile releasing its grenade payload with rotational and tangential velocity components, as taught by the present invention.

Bueno teaches away from the pusher plate inducing shearing the threaded attachment of the base assembly to the projectile body section, and a projectile releasing its grenade payload with rotational and tangential velocity taught by the present invention. Instead, as shown in FIG.1 of Bueno, an entire submunition packet is housed between the front plate 2 and rear member 3 by means of long rods 12. The lower end of each rod 12 is connected to a shear pin 11 beneath the lip of vessel 6.

The expansion of the gases that occurs when the powder 15 is detonated produces pressure between the inside of the nose cone 18 and the plate 2, which pulls on the body 19 and causes it to separate from the tail 20 by shearing pins 21. The detonation also shears pins 11 to release the lower ends of rods 12.

In addition, in FIG.1, the spring 7 pushes the floating disc 5 and cones 4 forward until disc 5 hits the rear member 3 which is attached to the tail 20 by means of the rod 10. The movement of the cones 4 pushes the submunition forward, and releases them from their housing on the rear plate 3, etc. In contrast, the present invention only requires ignition of a propellant to produce a gas pressure acting on a pusher plate, without the need for a spring to push to release the grenade payload from the projectile.

In addition, Bueno teaches a means of cogs 13, in FIG.2, creating a lateral component which facilitates the separation of the submunition columns and improves their dispersion when falling over the ground. This lateral component necessarily creates a lateral velocity component in the submunition, which is absent from the present invention.

Fowler teaches away from the present invention of launching the projectile from a non-spin launcher and releasing a grenade payload from the projectile with a rotation. In contrast, Fowler patent teaches an obturator that includes an annular ring on a projectile to be fired from a gun barrel with a rifling bore to induce spin on the projectile during its travel down the bore.

C.4. The combination of the projectile of Bueno and Fowler does not yield the same or similar product as taught by the present invention.

Considering for the sake of argument only, that the two cited references were combined, the combination of Bueno and Fowler does not yield the same or similar product as taught by the present invention.

In this theoretical combination, Bueno and Fowler would yield a projectile fitted with an obturator including a band on the projectile, and the projectile is to be fired from a gun with a rifling bore to induce spin on the projectile during its travel down the bore. Over the target area, a charge is set off in the front of the projectile, shearing pins and releasing an axial spring and a means of cogs to create both a forward velocity and a lateral component to release the payload of submunition.

In contrast, the present invention teaches a grenade dispensing mechanism for non-spin or low spin improved conventional munitions launched from inside a projectile. At a pre-determined point along the trajectory, the projectile time fuze which is set at the gun functions to provide initiation output to the payload expulsion charge assembly. The said assembly contains a propellant which when ignited, produces a gas pressure acting on a pusher plate which acts as a piston. The gas pressure increases with time until the forces of the **gas pressure acting on the pusher plate** through the grenade payload to the base/tail assembly are sufficient to **shear the thread attachment** of the base assembly to the projectile body section.

An obturator band serves to obturate or seal the expulsion gas pressures to prevent excessive gas blow-by as the payload canister assembly travels through the rifled projectile body section. Upon thread shear, the base separates from the projectile body permitting the movement of the grenade payload toward the aft open end of the projectile body. The projectile payload section contains the space occupied by the warhead or payload canister assembly. The steel cylindrical canister encloses the grenade sub-package.

A pre-engraved rotating band attached to the payload canister as it travels through the projectile section rifling creates a torque thus the grenades emerge from the projectile body, at the aft open end, with rotational and tangential velocity determined by their position in the payload section. This rotational and tangential velocity causes the grenades to disperse, arm and stabilize to form a large approximately uniform, distribution of grenades in a pattern effects over a target area.

In this hypothetical combination, the payload still relies on a spring to push the submunition forward, and a means of cogs to impart a lateral component to facilitate release of the submunition from the projectile. It does not teach that the propellant ignition only, pusher plate, and shearing mechanism to release grenade payload as is recited in the claims on file.

As a result, the hypothetical combination of the teachings of the two cited references would yield a product that is significantly **different from the present invention taken as a whole**.

Consequently, the claims on file are allowable over the cited references.

CONCLUSION

All the claims presently on file in the present application are in condition for immediate allowance, and such action is respectfully requested. If it is felt for any reason that direct communication would serve to advance prosecution of this case to finality, the Examiner is invited to call the undersigned at the below-listed telephone number.

Respectfully submitted,

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Michael Sachs
Attorney for Applicant
Reg. No. 29,262
Tel. (973) 724-6595